

the region of observation in November. The evening of the 24th, when low area XIV was central over Colorado, a marked decrease of pressure was shown on the north Pacific coast, the barometer reading below 29.60, with heavy rain and southeast gales on the Washington coast. On the 25th the barometer continued low, with heavy rain in the Pacific coast states north of the 37th parallel. From the 26th to the close of the month exceptionally heavy rains and high winds prevailed in California. On the 27th the pressure fell below 29.00 on the Washington coast, with wind velocities of 50 miles per hour at Fort Canby and Tatoosh Island.

The pressure continued below 29.00 on the Washington

coast until the morning of the 28th, the wind reached a velocity of 72 miles per hour from the southeast at Fort Canby, Wash., and 52 miles per hour from the southeast were registered at San Francisco, Cal. On the 29th the pressure was below 29.40 over western Washington, and heavy rains and high winds continued in the Pacific coast states. During the 30th the pressure decreased on the north Pacific coast, a reading of 29.06 being reported at Tatoosh Island at the evening report, wind velocities of 60 to 70 miles per hour occurred on the Washington coast, very heavy rain continued in the Pacific coast states, and a velocity of 56 miles per hour from the northeast was noted at San Francisco, Cal.

NORTH ATLANTIC STORMS FOR NOVEMBER, 1892.

[Pressure in inches and millimeters; wind-force by Beaufort scale.]

The paths of storms that appeared over the west part of the north Atlantic Ocean during November, 1892, are shown on Chart I. These paths have been determined from reports of observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

In November there is usually a decrease of atmospheric pressure over the north Atlantic Ocean, the decrease being most marked north of the British Isles, where the Iceland winter area of low pressure is forming. A large proportion of the storms of November move from Newfoundland toward the region north of the British Isles; their average velocity is about 21 statute miles per hour; and an average of two storms per month traverse the ocean from the American to the European coasts.

The severest disturbances of November, 1892, attended the passage of a storm which moved from the region between Bermuda and the North Carolina coast northeastward over Newfoundland during the last three days of October. Reports of November 1st show this storm central northeast of the Banks of Newfoundland, with pressure about 28.70 (729) and north to west gales of force 9 to 10. By the morning of the 2d the storm-center had advanced eastward to the 35th meridian, and northwest gales of hurricane force were encountered between the 35th and 40th meridians. During the next 24 hours the center of disturbance moved eastward about 10 degrees without any appreciable loss of strength; the central pressure continued about 28.70 (729); and northwest gales of force 10 to 11 were reported to the westward of the storm-center. Reports of the 4th locate the storm somewhat to the westward of Ireland. By the 5th it had passed north of the British Isles.

The morning of the 4th low area I was central south of Newfoundland, and low area IIa occupied the middle Atlantic coast. By the morning of the 5th low area I had passed eastward over the Banks of Newfoundland, low area II had moved southward over Maine, and low area IIa had advanced to a position southeast of Nova Scotia. On that date the pressure fell to about 29.30 (744) on the west edge of the Grand Banks, and northwest gales of force 10 to 11 were encountered between the 60th and 70th meridians. By the morning of the 6th low areas II and IIa had united south of Newfoundland; over the Banks of Newfoundland the pressure fell to about 29.20 (742), and strong to whole gales occurred during the day between the 40th and 50th meridians. By the 7th this storm had passed rapidly northeastward beyond the region of observation.

From the 10th to the 14th a storm of marked energy, low area IV, advanced from New Brunswick to the British Isles. This storm originated in the Gulf of Mexico, moved northeastward over the east Gulf and south Atlantic states during the 9th, and reached New Brunswick the night of the 10th.

Reports of the 11th locate the storm-center north of Newfoundland, with pressure about 29.40 (747), from which region it passed eastward to mid-ocean by the 12th, and thence to a position west of the British Isles by the 13th, with pressure about 29.00 (736) on the last-named date. During the 14th the center apparently moved east or northeast over the British Isles.

Unsettled weather prevailed along the middle Atlantic and New England coasts from the 15th to 17th, attending the passage from the North Carolina coast to the lower Saint Lawrence valley of low area VIII. On the 19th a storm of marked strength, with pressure about 29.30 (744) appeared near the trans-Atlantic steamship tracks between the 20th and 30th meridians. By the 20th this storm had increased in intensity, and reports showed pressure about 28.90 (734) near the 20th meridian. On the 21st the center of disturbance had shifted position to the westward, and pressure about 29.20 (742) was noted near the 30th meridian. On that date low area X appeared southeast of Nova Scotia.

By the 22d low area X and the storm-central over mid-ocean on the 21st had apparently united near the 40th meridian. On that date the lowest pressure reported was about 29.20 (742), and heavy gales prevailed over mid-ocean. This storm occupied the region north of the Grand Banks until the 25th. From the 28th to the 30th unsettled weather prevailed off the middle Atlantic and New England coasts attending the passage of low area XVa, and on the 30th severe gales were reported west of the Banks of Newfoundland. On the 29th a storm of moderate strength moved northeastward over the Banks of Newfoundland.

OCEAN ICE IN NOVEMBER.

No Arctic ice was reported for November, 1892. In November, 1891, an iceberg was observed in N. 51° 58', W. 55° 35', on the 8th. In November, 1890, a small piece of ice was noted in N. 46° 35', W. 47° 51'. In November, 1882, 1883, 1887, and 1888, no ice was reported near Newfoundland and the Grand Banks. In November, 1884 and 1889, several icebergs were seen over the eastern part of the Banks of Newfoundland. On one date in November, 1885, and one date in November, 1886, ice was observed south of the 50th parallel.

OCEAN FOG IN NOVEMBER.

The limits of fog belts west of the 40th meridian, as determined by reports of shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 14 dates; between the 55th and 65th meridians on 3 dates; and west of the 65th meridian on 1 date. Compared with the corresponding month of the last 5 years the dates of occurrence of fog near the Grand Banks numbered 4 more than the average; between the 55th and 65th meridians the same as the average; and west of the 65th meridian 3 less

than the average. The night of the 2-3d exceptionally dense fog prevailed along the New York and south New England coasts, attending the passage of low area I from the Saint

Lawrence Valley to Nova Scotia. The fog noted west of the 40th meridian was generally encountered in the east quadrants of general storms.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of mean temperature over the United States and Canada for November, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over extreme southern Florida and in the Colorado Desert, Cal., where it was above 70, and the mean values were above 60 over the Florida Peninsula, along the immediate Gulf coast, over southeastern Texas, in the lower Colorado and Gila valleys, and generally over California south of the 35th parallel. The mean temperature was lowest in Manitoba, where it was below 15. The mean readings were below 20 in the Valley of the Red River of the North, north of a line traced from Georgian Bay to the north shore of Lake Michigan, thence to southeastern Wisconsin, thence to eastern South Dakota, and thence to northwestern Montana, where they were below 30.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was below the normal east of a line traced from northwestern Montana southeastward to the middle Gulf coast. Over the Rocky Mountain and plateau regions, in the middle and south Pacific coast states, and over eastern Maine and the Canadian Maritime Provinces the mean temperature was above the normal. The most marked departure below the normal temperature was noted in the western Saskatchewan valley, where it was from 6 to 10; in the middle and upper Mississippi, Ohio, and upper Red River of the North valleys and over the southwestern lake region the month was 4 to 6 colder than usual. The greatest departure above the normal temperature was reported at stations in the middle and northern plateau regions and eastern New Brunswick, where it exceeded 4.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for November for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for November, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for November during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of Nov.	(2) Length of record.	(3) Mean for Nov., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for November.			
					Highest.	Year.	Lowest.	Year.
<i>Arizona.</i>	°	Years	°	°	°		°	
Fort Apache	43.3	21	45.6	+ 2.3	48.1	1873	38.5	1880
Fort Mohave	59.9	20	59.8	- 0.1	66.2	1873	53.4	1880
Whipple Barracks	43.6	20	45.6	+ 2.0	48.4	1875	36.1	1886

Departures from normal temperature—Continued.

State and station.	(1) Normal for the month of Nov.	(2) Length of record.	(3) Mean for Nov., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for November.			
					Highest.	Year.	Lowest.	Year.
<i>Arkansas.</i>	°	Years	°	°	°		°	
Keesees Ferry	47.3	10	45.8	- 1.5	51.2	1890	44.1	1889
<i>California.</i>								
Fort Bidwell	39.5	19	40.1	+ 0.6	46.0	1884	31.9	1876
Riverside	57.5	10	.....	.....	59.7	1884	55.1	1886
<i>Colorado.</i>								
Las Animas	36.6	9	42.6	+ 6.0	42.6	1892	29.4	1889
<i>Florida.</i>								
Merritts Island	68.0	10	66.5	- 1.5	73.3	1883	60.0	1885
<i>Georgia.</i>								
Forsyth	56.5	17	57.6	+ 1.1	61.7	1874, '90	51.0	1880
<i>Idaho.</i>								
Boise Barracks	38.7	18	42.0	+ 3.3	45.8	1885	31.5	1880
Fort Sherman	35.9	8	38.8	+ 2.9	42.6	1890	25.4	1886
<i>Illinois.</i>								
Centralia	40.8	8	.....	.....	46.0	1888	29.0	1880
<i>Indiana.</i>								
Lafayette	39.9	9	36.6	- 3.3	44.6	1890	36.6	1892
<i>Indian Territory.</i>								
Fort Supply	44.1	11	45.0	+ 0.9	48.8	1885	39.2	1889
<i>Iowa.</i>								
Cresco	28.7	20	28.1	- 0.6	34.7	1878	19.2	1880
<i>Kansas.</i>								
Eureka Ranch	39.6	9	.....	.....	44.7	1885	30.3	1887
Independence	43.9	20	44.5	+ 0.6	50.7	1878	33.6	1880
Salina	41.8	10	41.8	0.0	44.5	1887	39.6	1891
<i>Louisiana.</i>								
Grand Coteau	59.5	10	60.6	+ 1.1	64.0	1883	56.2	1889
<i>Maine.</i>								
Orono	33.9	22	37.0	+ 3.1	38.6	1889	27.1	1875
<i>Maryland.</i>								
Cumberland	40.0	21	41.0	+ 1.0	44.7	1883	35.0	1880
<i>Michigan.</i>								
Kalamazoo	37.2	16	35.6	- 1.6	43.4	1890	27.0	1880
<i>Missouri.</i>								
Sedalia	43.7	9	39.8	- 3.9	46.7	1887	38.5	1891
<i>Montana.</i>								
Fort Custer	32.9	13	36.6	+ 3.7	39.9	1890	24.5	1880
<i>Nebraska.</i>								
Fort Robinson	35.6	8	38.3	+ 2.7	40.7	1885	31.8	1886
Genoa (near)	33.6	16	35.4	+ 1.8	39.8	1890	22.6	1880
<i>Nevada.</i>								
Browns	41.1	20	43.4	+ 2.3	46.7	1891	25.8	1880
Carson City	37.5	15	40.3	+ 2.8	42.2	1885	31.4	1881
<i>New Hampshire.</i>								
Hanover	34.1	21	35.1	+ 1.0	37.1	1877	24.8	1873
<i>New Mexico.</i>								
Deming	53.6	11	61.2	+ 7.6	61.2	1892	47.2	1881
Fort Wingate	39.4	21	43.4	+ 4.0	44.4	1891	31.4	1880
<i>New York.</i>								
Cooperstown	34.9	21	34.6	- 0.3	38.5	1876, '77	26.8	1873
Plattsburg Barracks	34.4	21	34.1	- 0.3	39.0	1889	25.3	1873
<i>North Carolina.</i>								
Lenoir	45.2	20	43.4	- 1.8	49.8	1890	39.9	1872
<i>Oklahoma.</i>								
Fort Reno	47.6	9	47.1	- 0.5	51.5	1885	42.7	1889
Fort Sill	47.8	20	48.3	+ 0.5	52.9	1879	36.6	1880
<i>Oregon.</i>								
Bandon	49.2	8	50.2	+ 1.0	52.0	1891	43.0	1886
<i>Pennsylvania.</i>								
Dyberry	34.7	19	34.4	- 0.3	38.3	1883	24.9	1878
Grampian	35.3	21	35.3	0.0	39.2	1890	29.3	1872
Wellsboro	38.3	13	34.1	- 4.2	41.4	1885	34.1	1892
<i>South Carolina.</i>								
Statesburg	53.8	11	52.0	- 1.8	58.2	1890	51.2	1891
<i>South Dakota.</i>								
Fort Sully	30.5	21	31.4	+ 0.9	39.2	1878	21.1	1880
<i>Texas.</i>								
Austin	57.5	20	58.9	+ 1.4	63.2	1883	46.0	1880
Silver Falls	49.2	6	52.1	+ 2.9	52.4	1890	45.3	1889
<i>Utah.</i>								
Terrace	35.6	20	39.5	+ 3.9	46.0	1885	24.1	1880
<i>Vermont.</i>								
Strafford	33.5	19	32.3	- 1.2	37.9	1886	23.4	1873
<i>Virginia.</i>								
Dale Enterprise	46.6	12	41.4	- 5.2	49.6	1888	41.3	1880, 1884
<i>Washington.</i>								
Fort Townsend	43.1	17	44.1	+ 1.0	47.3	1884	39.2	1880
<i>West Virginia.</i>								
Parkersburg	46.4	11	41.5	- 4.9	55.7	1881	40.1	1886
<i>Wisconsin.</i>								
Embarrass	33.6	21	28.2	- 5.4	36.6	1888	22.3	1880
Madison	33.2	15	.....	.....	38.4	1890	27.3	1872
<i>Wyoming.</i>								
Fort Washakie	26.4	8	34.4	+ 8.0	34.5	1890	10.1	1880